GEARTECH	QUALITY PROCEDURE	No. QP8704 Rev. A	SHEET 1 OF 2
Inspection of Gear Tooth Contact Patterns in a Gear Housing		BY RLE	DATE 8/13/02
		CKD JRM	DATE 8/13/02

1. Scope

1.1 This procedure covers inspection of gear tooth contact patterns using hard lacquer under load in a gear housing.

2. Referenced Documents

2.1 AGMA 915-3-A99 Inspection Practices- Gear Blanks, Shaft Center Distance and Parallelism.

2.2 GEARTECH Specifications:

CK8700 QP8700 Gear Tooth Contact Patterns.

QP8702 Inspection of Gear Tooth Contact Patterns with Hard Lacquer.

QP8704 Inspection of Gear Tooth Contact Patterns in a Gear Housing.

3. Terminology

3.1 Gear housing- The housing for supporting the gearset to be inspected for gear tooth contact patterns. The gear housing shall be a functional housing to be used in service with the inspected gearset.

3.2 Foundation- The support for the gear housing. For a foot-mounted gear housing, the foundation is usually a concrete pad with a steel baseplate, or steel frame. For a shaft-mounted gear housing, the foundation is usually a shaft upon which one of the gearbox shafts is mounted with a coupling such as a shrink ring or bolted connection. The foundation for a shaft-mounted gear housing includes a torque arm. Preferably, the foundation is a functional foundation to be used in service. Otherwise, the foundation may be a temporary foundation used for contact pattern tests. A temporary foundation shall simulate the functional foundation as closely as practical.

3.3 Center distance- Shortest distance between the shaft axes measured at the center of the gear face width.

3.4 Normal backlash- Backlash normal to the tooth surface in the plane of action, as measured with a feeler gage.

3.5 Face width- Width of the gear teeth in the axial direction of the gear.

3.6 Functional shaft- The shaft upon which the pinion or gear is mounted when in service.

3.7 Functional bearing- The bearing upon which the pinion or gear is supported in service.

4. Significance and Use- See QP8700.

5. Apparatus

5.1 Gear Housing- Contact pattern tests shall be performed on a gearset in a gear housing.

5.2 Contact patterns- Apparatus for inspecting contact patterns shall be in accordance with QP8702.

6. Test Specimens

6.1 Gearset- The gearset to be tested shall be mounted on functional shafts, functional bearings, and assembled into a functional gear housing.

7. Procedure

7.1 Installation of gear housing on foundation- The gear housing shall be installed on its foundation using appropriate procedures necessary to ensure shaft parallelism of the gearset is within limits specified by AGMA 915-3-A99.

7.2 Installation of gearset in gear housing- The gearset shall be mounted on functional shafts, functional bearings, and installed in a functional gear housing.

7.3 Center distance- Center distance shall be checked after installing the gearset in the gear housing. The center distance shall be within limits specified on the engineering drawings for the gearset.

7.4 Backlash- Backlash shall be checked after checking center distance. Normal backlash shall be within limits specified on the engineering drawings for the gearset.

7.5 Shaft endplay- The axial endplay of the pinion and gear shafts shall be measured with a precision dial indicator. The shafts shall be rotated while pressure is applied in both axial directions to seat bearing rollers. Shaft endplay shall be within limits specified on the engineering drawings. For double-helical gearsets, either the pinion or gear shall be free to move axially to share load equally between the two helices. The axial freedom shall be confirmed by moving the floating pinion or gear axially through the backlash. For shafts with tapered-roller bearings, it is especially important to ensure shaft endplay simulates functional endplay because shaft endplay influences shaft parallelism.

7.6 Contact pattern tests- Gear tooth contact patterns shall be inspected in accordance with QP8702.

8. Report

8.1 The report shall include the following:

8.1.1 Record of center distance,

8.1.2 Record of normal backlash,

8.1.3 Record of shaft endplay, and

8.1.4 Report in accordance with QP8702.